CLAIMS

1. A method of producing at least one characteristic line of an air mass detecting device of an internal combustion engine with linking an output signal of the air mass detecting device with an air mass flow, comprising the steps of

a) obtaining coarse signals of an error mass detecting device by placing the air mass detecting device at a different operational points of an internal combustion engine testing stand of an air mass flow, and detecting signals produced by the air mass detecting device;

b) recalculating the coarse signals of the air mass detecting device into air mass flow values by interpolation of an output characteristic line;

c) forming average values of the air mass flow values via integral multiple of a pulsation period for a corresponding operational point;

d) calculating a deviation which corresponds to a deviation of the average air mass flow from a comparison air mass flow for a corresponding operational point;

e) calculating a square norm through a matrix of the deviation;

f) producing an adjusted characteristic line in the sense of optimization with respect to a condition that the square norm is minimal;

g) recalculating the course signals of the air mass detecting device into air mass flow values by interpolation on the adjusted characteristic line; and

h) iterating by repeating the steps g), c), d), e), and f).

2. A method as defined in claim 1; and further comprising using as optimization a non-linear optimization in accordance with the Levenberg-Marquard method.

3. A method as defined in claim 1; and further comprising interrupting the iterating after a predetermined number of iteration steps.

4. A method as defined in claim 1; and further comprising interrupting the iterating after reaching a predetermined value for the square norm.

5. A method as defined in claim 1; and further comprising detecting the signals in a total region of the internal combustion engine selected from the group consisting of a load region, a rotary speed region, and both, of the internal combustion engine.

6. A method as defined in claim 1; and further comprising using different accidentally generated statistic characteristic lines as output characteristic lines.

7. A method as defined in claim 1; and further comprising performing the optimization also with respect to a secondary condition, with which a desired coarse of the adjusted characteristic line is taken into consideration.

8. A method of producing at least one characteristic line of an air mass detecting device for an internal combustion engine with an output signal of the air mass detecting device linked with an air mass flow, comprising the steps of

a) obtaining coarse signals of an air mass detecting device by placing the air mass detecting device at different operational points on an internal combustion engine testing stand of an air mass flow,

b) detecting signals produced by the air mass detecting device,

c) producing a histograms from the coarse signals through at least one complete polarization period for a corresponding operational point of the internal combustion engine;

d) recalculating equidistant signal values into air mass flow values by interpolation on an output characteristic line;

e) forming weighted average value of the air mass flow values with the use of the histogram, in correspondence for the operational points;

f) calculating a deviation which corresponds to a deviation of the average air mass value from a comparison air mass value;

g) calculating a square norm through a matrix of the deviation;

h) producing an adjusted characteristic line in the sense of an optimization with respect to a condition that the square norm is minimal;

i) recalculating the signals of the air mass detecting device into air mass flow values by interpolation on the adjusted characteristic line; and

j) iterating by repeating the steps h), d), e), f), and g).

9. A method as defined in claim 8; and further comprising using as optimization a non-linear optimization in accordance with the Levenberg-Marquard method.

10. A method as defined in claim 8; and further comprising interrupting the iterating after a predetermined number of iteration steps.

11. A method as defined in claim 8; and further comprising interrupting the iteration after reaching a predetermined value for the square norm.

12. A method as defined in claim 8; and further comprising detecting the signals in a total region of the internal combustion engine selected from the group consisting of a load region, a rotary speed region, and both, of the internal combustion engine.

13. A method as defined in claim 8; and further comprising using different accidentally generated statistic characteristic lines as output characteristic lines.

14. A method as defined in claim 8; and further comprising performing the optimization also with respect to a secondary condition, with which a desired coarse of the adjusted characteristic line is taken into consideration.